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EXAMINER	
PEREZ DAPLE, AARON C	

ART UNIT	PAPER NUMBER
2121	5

DATE MAILED: 12/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/716,892	CHANDHOKE, SUNDEEP	
	Examiner	Art Unit	
	Aaron C Perez-Daple	2121	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 November 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,5-17,19,20 and 23-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,5-17,19,20 and 23-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. This Action is in response to Amendment filed 11/10/03, which has been fully considered.

2. Claims 3, 4, 18, and 21-22 have been cancelled by Applicant.

3. Claims 1, 2, 5-17, 19, 20 and 23-25 are presented for examination.

4. This Action is made FINAL.

Response to Arguments

112 Rejections

5. The rejection of **claims 5, 9, 14, and 23** under 35 USC 112, second paragraph, is withdrawn in view of Applicant's Amendment.

6. The rejection of **claim 11** under 35 USC 112, second paragraph, is withdrawn in view of Applicant's argument, which is found persuasive.

102 Rejections

7. Applicant's arguments filed 11/10/03 have been fully considered but they are not persuasive. Applicant asserts that Gudaz does not teach or suggest *receiving user input specifying one or more of stiffness or response time* but, rather, is limited to measuring or calculating these parameters. In contrast, the Examiner finds that Gudaz clearly suggests *receiving user input specifying one or more of stiffness or response time.* Gudaz teaches creating a robustness map wherein tuning parameters (which include stiffness and response time) are associated with the points in the map [see col. 22, line 55 - col. 23, line 43, "Next, a

user may...the selected point)."]. It is important to note that, although the tuning parameters are calculated in this step, the calculation of the tuning parameters occurs *prior* to selection by the user of a point on the robustness map. Thus, specifying a point on the robustness map is equivalent to specifying desired tuning parameters, as taught by Gudaz [col. 23, lines 27-29, "The selected robustness...pattern as desired."]. Furthermore, *receiving user input specifying one or more of stiffness or response time* is commonly known by those of ordinary skill in the art [see, for example, Arcara et al (US 4,407,013), col. 4, lines 42-58, "Thus, what has been...to the set point." and previously cited Lane et al (US 4,768,143), col. 6, lines 30-40, "To use the...process response."]. The Examiner finds that the Gudaz reference alone is sufficient to teach *receiving user input specifying one or more of stiffness or response time.* Therefore, the rejection of **claims 1, 2, 5, 7, 8, 11-14, 17, 19, 20 and 23-25** under 35 USC 102(e) is maintained.

103 Rejections

8. Applicant's arguments filed 11/10/03 have been fully considered but they are not persuasive. Applicant admits that slider controls, command line interfaces and Zeigler-Nichols equations are well-known. Independent claims 1, 12, 19 and 25 are rejected under 35 USC 102 (see above). Therefore, the rejection of **claims 6, 9, 10, 15 and 16** under 35 USC 103(a) is maintained.

Claim Objections

9. Claim 25 is objected to because of the following informalities: line 10 recites "indxscludes" where it should recite --includes--. Appropriate correction is required.

Claim Rejections - 35 USC § 102

10. **Claims 1, 2, 5, 7, 8, 11-14, 17, 19, 20 and 23-25** are rejected under 35 U.S.C. 102(e) as being anticipated by Gudaz et al (US 6,510,353) (hereinafter Gudaz).

As for claim 1, Gudaz discloses a method for performing user controllable autotuning of a PID controller, the method comprising:

receiving user input indicating a desired characteristic of a PID controller autotuning algorithm [cols. 3-4, "A simulation procedure...the selected point."];

configuring the PID controller autotuning algorithm in response to the user input indicating the desired characteristic, wherein said configuring produces a configured PID controller autotuning algorithm [cols. 3-4, "A simulation procedure...the selected point."];

executing the configured PID controller autotuning algorithm to tune the PID controller [col. 4, "According to one aspect...the selected point."];

wherein the user input indicating the desired characteristic indicates a desired operation of the PID controller after execution of the autotuning algorithm, and wherein the desired operation includes one or more of stiffness and response time [col. 22, line 55 - col. 23, line 43, "Next, a user may...the selected point)."].

11. As for claim 2, Gudaz discloses the method of claim 1,

wherein the PID controller autotuning algorithm executes according to the desired characteristic specified by the user [cols. 3-4, "A simulation procedure...the selected point."].

12. As for claim 5, Gudaz discloses the method of claim 1, further comprising:

displaying a graphical user interface on a display device, wherein the graphical user interface includes one or more user input controls which are operable to receive the user input indicating the desired characteristic of the PID controller autotuning algorithm [col. 22, "Referring again to Fig. 8...other desired manner."].

13. As for claim 7, Gudaz discloses the method of claim 5,

wherein the one or more input controls comprise one or more data fields; wherein the one or more data fields are operable to receive respective parameter values indicating the desired characteristic of the PID controller autotuning algorithm [col. 24, "While Fig. 8 has...via a keyboard, etc."; Fig. 7].

14. As for claim 8, Gudaz discloses the method of claim 1,

wherein the user input comprises one or more parameter values indicating the desired characteristic of the PID controller autotuning algorithm [cols. 22-23, "Next, a user may...other pattern as desired."]; and

wherein said configuring the PID controller autotuning algorithm comprises applying the one or more parameter values to parameters of the PID controller autotuning algorithm [cols. 22-23, "Next, a user may...other pattern as desired."].

15. As for claim 11, Gudaz discloses the method of claim 1,

wherein the user input comprises a user-drawn step response curve, wherein the step response curve is displayed on a graphical user interface on a display device [col. 19, "As indicated above...the simulation plot was generated."], and wherein the method further comprises:

deriving one or more parameter values indicating the desired characteristic of the PID controller autotuning algorithm from the user-drawn response curve [col. 19, "As indicated above...the simulation plot was generated."];

wherein said configuring the PID controller autotuning algorithm comprises applying the one or more paramenter values to parameters of the PID controller autotuning algorithm [col. 19, "As indicated above...the simulation plot was generated."].

16. As for claim 12, Gudaz discloses a computer system for performing user controllable autotuning of a PID controller, the computer system comprising:

a processor [102, Fig. 6; col. 19, "Referring now to Fig. 6...desired robustness qualities."]

a memory medium coupled to the processor [102, Fig. 6; col. 19, "Referring now to Fig. 6...desired robustness qualities."], wherein the memory medium stores:

a PID controller autotuning algorithm [col. 19, "Referring now to Fig. 6...desired robustness qualities."]; and

a software program operable to configure the PID controller autotuning algorithm in response to user input [100, Fig. 6; col. 19, "Referring now to Fig. 6...desired robustness qualities."];

an input device which is operable to receive user input indicating a desired characteristic of the PID controller autotuning algorithm [col. 24, "While Fig. 8 has...via a keyboard, etc."];

wherein the software program is operable to configure the PID controller autotuning algorithm in response to the user input indicating the desired characteristic, wherein said configuring produces a configured PID controller autotuning algorithm [col. 19, "Referring now to Fig. 6...desired robustness qualities."];

wherein the processor is operable to execute the configured PID controller autotuning algorithm to tune the PID controller [col. 19, "Referring now to Fig. 6...desired robustness qualities."]; and

wherein the user input indicating the desired characteristic indicates a desired operation of the PID controller after execution of the autotuning algorithm, and wherein the desired operation includes one or more of stiffness and response time [col. 22, line 55 - col. 23, line 43, "Next, a user may...the selected point)."].

17. As for claim 13, Gudaz discloses the computer system of claim 12, further comprising:

a display device coupled to the processor [103, Fig. 6], wherein the display device is operable to display a user interface which is operable to receive the user input indicating a desired characteristic of a PID controller autotuning algorithm [col. 22, "Referring again to Fig. 8...other desired manner."].

18. As for claim 14, Gudaz discloses the computer system of claim 13,

wherein the user interface comprises a graphical user interface [Fig. 6], wherein the graphical user interface includes one or more user input controls which are operable to

receive the user input indicating the desired characteristic of the PID controller autotuning algorithm [col. 22, "Referring again to Fig. 8...other desired manner."].

19. As for claim 17, Gudaz discloses the computer system of claim 12,

wherein the PID controller autotuning algorithm is executable according to the desired characteristic specified by the user [col. 19, "Referring now to Fig. 6...desired robustness qualities."]; and

wherein the user input indicating the desired characteristic indicates a desired operation of the PID controller after execution of the autotuning algorithm [col. 19, "Referring now to Fig. 6...desired robustness qualities."].

20. As for claim 19, Gudaz discloses a memory medium comprising program instructions, wherein the program instructions computer-executable to perform:

receiving user input indicating a desired characteristic of a PID controller autotuning algorithm [col. 5, "According to a still further...with the selected point."; col. 19, "Referring now to Fig. 6...desired robustness qualities."];

configuring the PID controller autotuning algorithm in response to the user input indicating the desired characteristic, wherein said configuring produces a configured PID controller autotuning algorithm [col. 5, "According to a still further...with the selected point."; col. 19, "Referring now to Fig. 6...desired robustness qualities."];

executing the configured PID controller autotuning algorithm to tune the PID controller [col. 5, "According to a still further...with the selected point."; col. 19, "Referring now to Fig. 6...desired robustness qualities."];

wherein the user input indicating the desired characteristic indicates a desired operation of the PID controller after execution of the autotuning algorithm, and wherein the desired operation includes one or more of stiffness and response time [col. 22, line 55 - col. 23, line 43, "Next, a user may...the selected point)."].

21. As for claim 20, Gudaz discloses the memory medium of claim 19,

wherein the PID controller autotuning algorithm executes according to the desired characteristic specified by the user [col. 5, "According to a still further...with the selected point."].

22. As for claim 23, Gudaz discloses the method of claim 19, further comprising:

displaying a graphical user interface on a display device, wherein the graphical user interface includes one or more user input controls which are operable to receive the user input indicating the desired characteristic of the PID controller autotuning algorithm [cols. 5-6, "Referring now to Fig. 1...from one of the PCs 14."].

23. As for claim 24, Gudaz discloses the method of claim 23,

wherein the user input comprises one or more parameter values indicating the desired characteristic of the PID controller autotuning algorithm [cols. 22-23, "Next, a user may...other pattern as desired."]; and

wherein said configuring the PID controller autotuning algorithm comprises applying the one or more parameter values to parameters of the PID controller autotuning algorithm [cols. 22-23, "Next, a user may...other pattern as desired."].

24. As for claim 25, Gudaz discloses a graphical user interface displayed on a display device, therein the graphical user interface includes:

one or more user input controls displayed in the graphical user interface which are operable to receive user input indicating a desired characteristic of a PID controller autotuning algorithm [Fig. 6; col. 22, "Referring again to Fig. 8...other desired manner."];

wherein the user input indicating the desired characteristic of the PID controller autotuning algorithm is operable to be used in configuring the PID controller autotuning algorithm [col. 5, "According to a still further...with the selected point." ; col. 22, "Referring again to Fig. 8...other desired manner."], wherein the user input indicating the desired characteristic indicates a desired operation of the PID controller after execution of the autotuning algorithm, and wherein the desired operation includes one or more of stiffness and response time [col. 22, line 55 - col. 23, line 43, "Next, a user may...the selected point)."].

Claim Rejections - 35 USC § 103

25. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

26. Claims 6 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gudaz in view of Kennedy et al (US 5,832,532). Although obvious to one or ordinary skill in the art, Gudaz does not specifically disclose the use of a slider control as one of the input controls. However, Gudaz does disclose the use numeric cell [Fig. 6; col. 24, "While Fig. 8 has...via a keyboard, etc."] for setting and displaying parameter values. Kennedy discloses that a slider control can be used instead of (or in addition to) a cell containing a numerical value in order

to allow the user to graphically adjust the parameter value over a range of possible values [col. 11, "Controls are individual display...the mouse on the box."].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the user interface of Gudaz by using a slider control in order to graphically adjust the PID controller autotuning characteristics or parameters, as taught by Kennedy.

27. Claims 9 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gudaz in view of in view of Molnar et al (US 5,734,597) (hereinafter Molnar). Although obvious to one or ordinary skill in the art, Gudaz does not specifically disclose displaying a command line interface on a display device. However, Molnar discloses that a command line interface may be substituted for a graphical user interface, or vice-versa [col. 1 "As users of computers...and Microsoft Windows."], as both can be used to perform equivalent functions (such as setting parameters or characteristics).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute a command line interface for the graphics display interface disclosed by Gudaz, wherein the command line interface is operable to receive the user input indicating the desired characteristic of the PID controller autotuning algorithm, in order to provide an alternate interface method for setting the PID controller autotuning characteristics.

28. Claim 10 is rejected under 35 U.S.C. 103(a) as being obvious over Gudaz. Gudaz discloses that a modified Ziegler-Nichols method may be used in tuning a PID controller [col. 10, "Likewise, the tuning controller...Ziegler-Nichols tuning, to name a few."].

Furthermore, the Office notes that both the concept and advantages of using a modified Ziegler-Nichols method are well-known and expected in the art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an autotuning algorithm comprising modified Ziegler-Nichols equations, which are well-known in the art, for the purpose of tuning the controller of Gudaz.

Conclusion

29. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 4,407,013, teaches user selection of response time; US 4,577,097, teaches user selection of parameters.

30. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron C Perez-Daple whose telephone number is (703)305-4897. The examiner can normally be reached on 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anil Khatri can be reached on (703)305-0282. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

12/1/03

Aaron Perez-Daple

Wilbert L. Starks, Jr.
Primary Examiner
Art Unit - 2121